STATE OF COLORADO

COLORADO DEPARTMENT OF HEALTH
Dedicated to protecting and improving the health and environment of the people of Colorado

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Roy Romer
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Patricia A. Nolan, MD, MPH
Executive Director

December 1, 1992

Mr. Richard J. Schassburger
U.S Department of Energy
Rocky Flats Plant
Building 116
P. O. Box 928
Golden, Colorado 80402-0928

RE: COMMENTS; Technical Memorandum (TM-1) Vadose Zone Investigation (to the FINAL, Phase I, RFI/RI WORKPLAN), ROCKY FLATS PLANT, Solar Evaporation Ponds (Operable Unit No. 4), November 1992

Dear Mr. Schassburger:

The Colorado Department of Health, Hazardous Materials and Waste Management Division (the Division) and the U. S. Environmental Agency (EPA) have reviewed the subject document submitted by DOE and prime contractor, EG&G. The Division's comments are attached; EPA's comments are being transmitted separately.

In DOE's transmittal letter of November 12th, DOE assumed that EPA and the Division would grant conditional approval of this document on an accelerated schedule to support commencement of vadose zone work. The Division, although desiring prompt action, believes that DOE's request for expedited review is inappropriate.

The Division stated its expectation that vadose zone monitoring be a component of the work plan in correspondence dated December 20, 1991 (Gary Baughman to Frazer Lockhart) and reiterated that expectation on May 8, 1992. Had DOE begun work on this technical memorandum early in the new year, an expedited review would not have been necessary. Henceforward, DOE should not assume that the Division will be willing or able to accommodate such requests.

Nevertheless, the Division, as lead regulatory agency, hereby grants conditional approval for vadose zone investigations to proceed provided DOE ensures that Division and EPA comments are fully considered and, as appropriate, incorporated into field activities. Failure to meet these terms may result in the subsequent rejection of the work to be performed.

Lastly, DOE must revise the document in accordance with the schedule set forth in the transmittal letter of November 12th or the Division will immediately withdraw this conditional approval.

R. J. Schassburger
December 1, 1992

If you have any questions concerning the conditions or the attached comments, please call Harlen Ainscough of my staff at 692-3337.

Sincerely,

Gary W. Baughman, Chief
Facilities Section
Hazardous Waste Control Program

Attachments
cc: Daniel S. Miller, AGO
Jackie Berardini, CDH-OE
Martin Hestmark, EPA
Arturo Duran, EPA
Frazer Lockhart, DOE
Scott Surovchek, DOE
Randy Ogg, EG&G

Colorado Department of Health

Hazardous Materials & Waste Management Division

Comments

on

DRAFT FINAL

TECHNICAL MEMORANDUM (No. 1)

VADOSE ZONE INVESTIGATION

(Addendum to Final Phase I RFI/RI Work Plan)

for

SOLAR EVAPORATION PONDS

OU-4

ROCKY FLATS PLANT

NOVEMBER, 1992

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COVER: For record-keeping purposes this TM should be retitled as follows: Technical Memorandum No. 1, to Final Phase I RFI/RI Work Plan, Solar Evaporation Ponds, Operable Unit No. 4, U. S. Department of Energy, Rocky Flats Plant, Golden, Colorado, etc. with the date. Although the Executive Summary references the RFI/RI, the current title does not. Numbering TMs as they are developed will prevent filing problems and enable all parties to more conveniently reference the specific document.

Section 1.0: The claim is made once again that the "hydrostratigraphic units" at Rocky Flats are not aquifers. 6 CCR 1007-3 does not provide for the definition of "aquifer" as stated here; thus, these "hydrostratigraphic units" must be considered aquifers. DOE must come to an understanding of the requirements of the Colorado Hazardous Waste Act and its implementing regulations in regard to this definition.

Section 1.3.1: In reference to the fourth bullet, page 1-7, the "lower confined HSU" may be impacted by the uppermost unconfined hydrostratigraphic unit. The Arapahoe and Laramie Formations are truncated to the north and are in contact with Rocky Flats Alluvium and colluvium. Also, the French drain system, if tied into sandstone bedrock, may further impact the lower HSU. The Division brings these concerns to DOE's attention because, as stated in the

opening paragraph, the information is "being used to guide the placement of boreholes and determine what data must be generated at each specific location." Please determine whether these observations affect your rationale for the proposed investigation plan.

Although caliche, beginning at a depth of approximately three feet, is evident from Solar Ponds area drilling (Phase I RFI/RI Work Plan, Appendix B), no specific discussion is provided. Since the bottoms of the solar ponds appear to have been constructed below this caliche horizon, does this information warrant alteration or variation in the proposed investigation plan. The Division, for example, notes the proposed use of the Guelph permeameters in the 0-2 foot zone. The Division is more concerned about the permeability beneath each of the ponds; if the caliche is absent as a result of pond excavation the Guelph devises may not be appropriate. Please verify the need for the Guelphs and demonstrate that permeability beneath the ponds is being specifically investigated particularly if angle versus vertical drilling is employed. For example, can BAT and lysimeters be utilized in angled boreholes?

Bullet 7: Care should be taken to have valid reasons such as bedrock highs, dry wells, or small saturated thickness before assuming an area dry. Well constructions should also be checked for problems.

Section 2.2.1: Was a detailed soils map overlooked in the data listing? Known contamination distribution patterns should be used with care as they may be biased by opinions about the hydrogeology.

Section 2.2.3: Bullet 8: Good point, do not overlook effects of previous saturation.

Section 2.2: What methods were used to determine how and where the proposed boreholes would be placed?

Section 2.2.4: Four of the proposed vadose zone boreholes are located within the perimeter of Pond 207C and the 207B ponds. Since water and sludge remain in these ponds and angle drilling may be the only timely solution for borehole completion, can the angle drilled holes accommodate borehole dependent vadose zone efforts?

Section 2.2.5: Reference is made in the last paragraph of page 2-9 to physical and hydraulic measurements of soil cores. Since vadose zone "soils" are expected to be unconsolidated or loosely consolidated material, physical alteration of the cores seems probable. Disaggregation of the core probably will occur long before it is planned. Other approaches to obtaining data should be considered.

In the last paragraph, page 2-10, what constitutes a "significant hydrogeologic unit?" Since it is stated earlier in the report that there are no significant hydrogeologic units, Rocky Flats needs to define this clearly or retract the initial statement.

Section 2.2.6: The geometric mean listed for Rocky Flats Alluvium may be a little low. Not all hydraulic conductivity values in the plant database have been validated.

Section 2.2.7: The use of Guelph permeameters is of concern as discussed under Section 1.3.1 above.

Under Moisture Profiles, page 2-14, in order to complete this investigation in a timely fashion some consideration might be given to creating an appropriate precipitation event.

Section 2.2.9: A statement is made in this section that assumes "appropriate precipitation, evaporation, transpiration, and run-off data are available" to support water balance calculations. This should not be assumed; DOE must research this issue to verify availability of such data or devise a plan component to acquire the needed data.

Although construction of a water balance for the facility is needed and can be refined by addition of the vadose zone knowledge, an initial balance has already been done for the area. What should be done via this system is a refining of that balance, rather than a reconstruction of the entire equation. A new balance should be constructed only if it can be shown that the older equation cannot be modified to include the vadose zone.

Section 2.2.12: Regarding page 2-20, if literature investigations do not turn up adequate information on the sorption characteristics of plutonium and americium is there consideration of performing tests with Rocky Flats soils?

Section 2.3: Regarding SOP approval, page 2-23, EPA and the Division must approve SOPs under the terms of the IAG, Statement of Work, Section IV. SOPs are a part of the Sampling and Analysis Plan.

Table 2.1: This table suggests one BAT test per borehole; however, text in Section 2.2.6, page 2-12, indicates, as the Division would expect, that more than one lithologic unit per borehole will be encountered and tested. Please amend Table 2.1 to reflect the probability of multiple BAT tests per borehole.

Figure 2-1: Work Element 4 is a decision point to determine whether enough data has been obtained to proceed with Work Elements 10 through 15. Section 2.2 does not discuss how this decision will be made. Ultimately, the adequacy of the data and conclusions will decided by EPA and the Division upon delivery of the RFI/RI

Report; however, an interim decision by DOE on when enough data is available to calculate Water Balance, for example, should be determined early on to minimize the need for a second round of data collection. The decision ideally should be made while the work is "in the field" rather than when DOE begins to run calculations and draw conclusions. Please discuss Work Element 4 in Section 2.2 to show how and when this decision will be made.

Figure 2-3: The conceptual model does not show what is alluvium or bedrock. Is the french drain keyed to bedrock? Does this work plan include searching for perching layers below those keyed into the french drain?

Section 3.0: A timeline showing the "time-sensitive" elements for implementing this system should be provided in this document. Some comparison of how this particular investigation will affect any other investigations which may be ongoing in the area, as well as any scheduling impacts due to normal operations or time and security constraints, should be included in the schedule.

Appendix A: Regarding page A-2, bullet 3, packer tests are not performed on alluvial materials. Sentence on geometric means of hydraulic conductivities probably includes sitewide data. Decide which information is pertinent to discussion.

Appendix B: The SOPs appear, on first reading, to be vague with perhaps to much reliance on instrument manuals. The Division would prefer that SOPs set forth a procedure as fully as possible and that use of instrument manuals be for reference purposes when problems or difficulties arise. Routine operation should be explained in the specific SOP to minimize the chance of field personnel "winging" the protocols.

Furthermore, the Division recently received draft SOP GT.22 for the BAT System and GT.31 for Soil Measurement Systems™ Tensiometers. These SOPs appear to be more instructive than those in the TM. Also, two SOPS for the same devise are inappropriate (unless VZ.3 is for a different make of tensiometer). Please determine which SOP(s) is appropriate and amend those SOPs that are heavily reliant on the instrument manuals (VZ.8, for example).

SOP VZ.6: The formula in Section 5.4 needs an equals sign following M_3. More importantly, the procedure for determining water content must be discussed. If necessary, provide a new SOP to discuss the procedure.